

PLACE



PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

ROMA

Centro Congressi
di Confindustria

Auditorium
della Tecnica

9^a Edizione

30 Settembre

**1 Ottobre
2022**



Valvola mitrale

TRATTAMENTO PERCUTANEO

VALVE IN VALVE E VALVE IN

RING

Sergio Berti



Potential conflict of interest

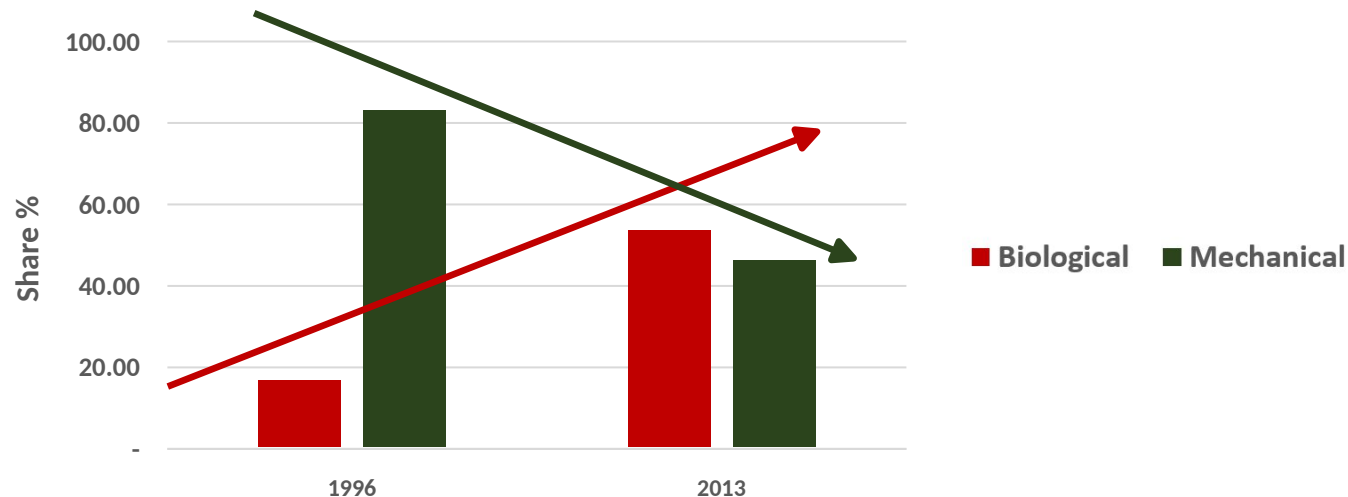
Speaker's name: Sergio Berti

- ☐ I have the following conflict of interest to report:
 - ☐ Proctor: Edwards, Boston, Abbott, J&J



Surgical mitral valve replacement: mechanical vs. biological

Use of mechanical vs. biological mitral valve prostheses¹



- Over the last 25 years, mitral valve replacement with biological prostheses has increasingly replaced mechanical prostheses.^{1,2}
- In total the incidence of reoperation is higher among patients receiving a biologic prosthesis compared to those receiving a mechanical prosthesis.

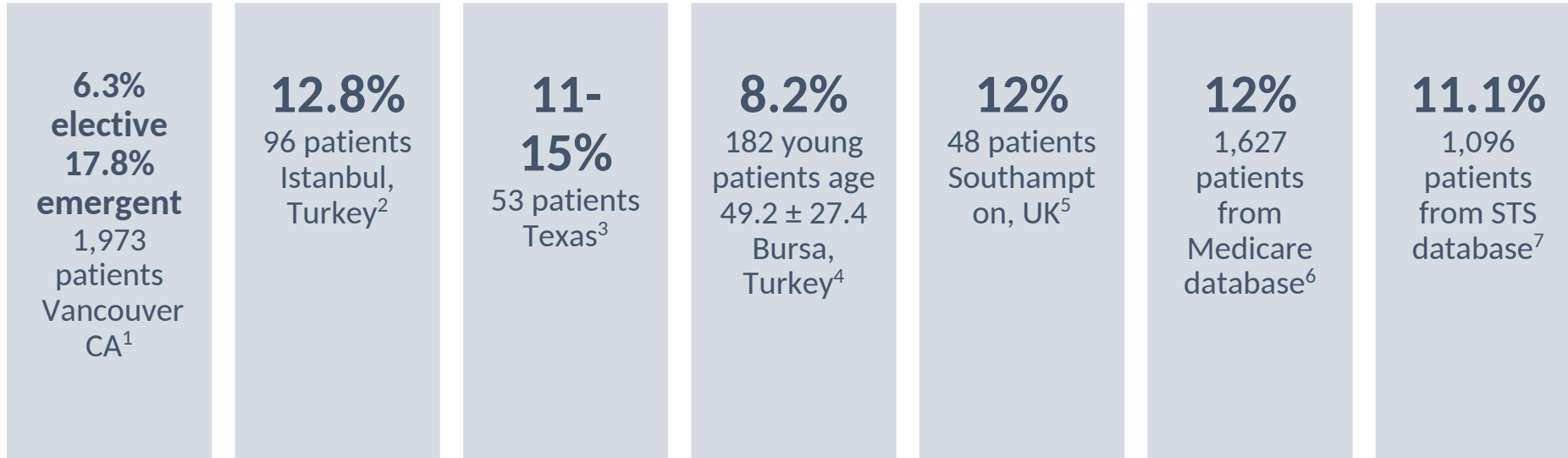
What if a reoperation becomes necessary for the patients with a biological prosthesis?

¹Goldstone et al. N Engl J Med . 2017 Nov 9;377(19):1847-1857

²Gammie et al. Ann Thorac Surg . 2009 May;87(5):1431-7; discussion 1437-9



The operative mortality risk of repeat mitral valve surgery is high



- Patients who require repeat mitral valve surgery often have many comorbidities and therefore a high risk of mortality.
- Several studies suggest that procedural mortality ranges from 6.3% to 15%.

¹Jamieson et al, Circulation 2003;108[suppl II]:II-98-II-102

²Albeyoglu, et al. Thorac Cardiovasc Surg 2006;54(4):244-249

³Toker et al, Tex Heart Inst J 2009; 26(6):557-562

⁴Ozyazicioglu et al, Turkish J Thorac Cardiovasc Surg 2012;20(3):497-502

⁵Vohra et al, Interact Cardiovasc Thorac Surg 2012 May;14(5):575-579

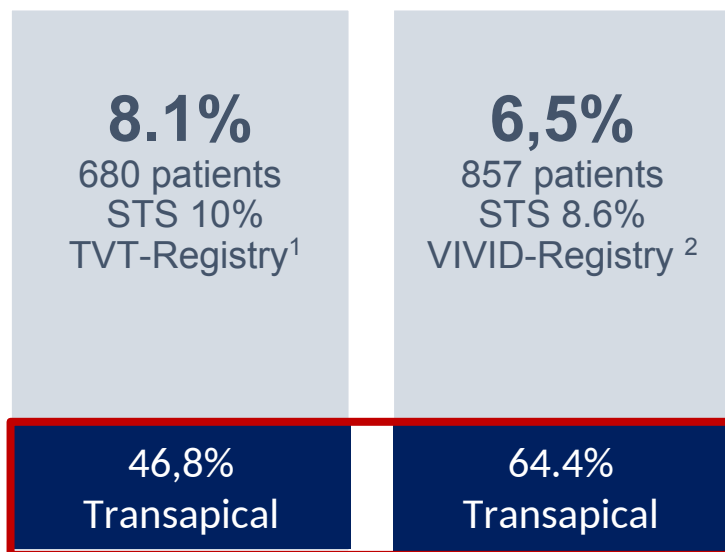
⁶Kwedat et al, Ann Thorac Surg 2017;104:1516-21

⁷Mehaffey et al, Heart 2018;104:652-656



Transcatheter mitral valve replacement: A suitable alternative?

- Registry data where many patients were treated transapically still show a rather high all-cause mortality after 30 days.
- As expected, the level of the STS score seemed to have had an impact on mortality.

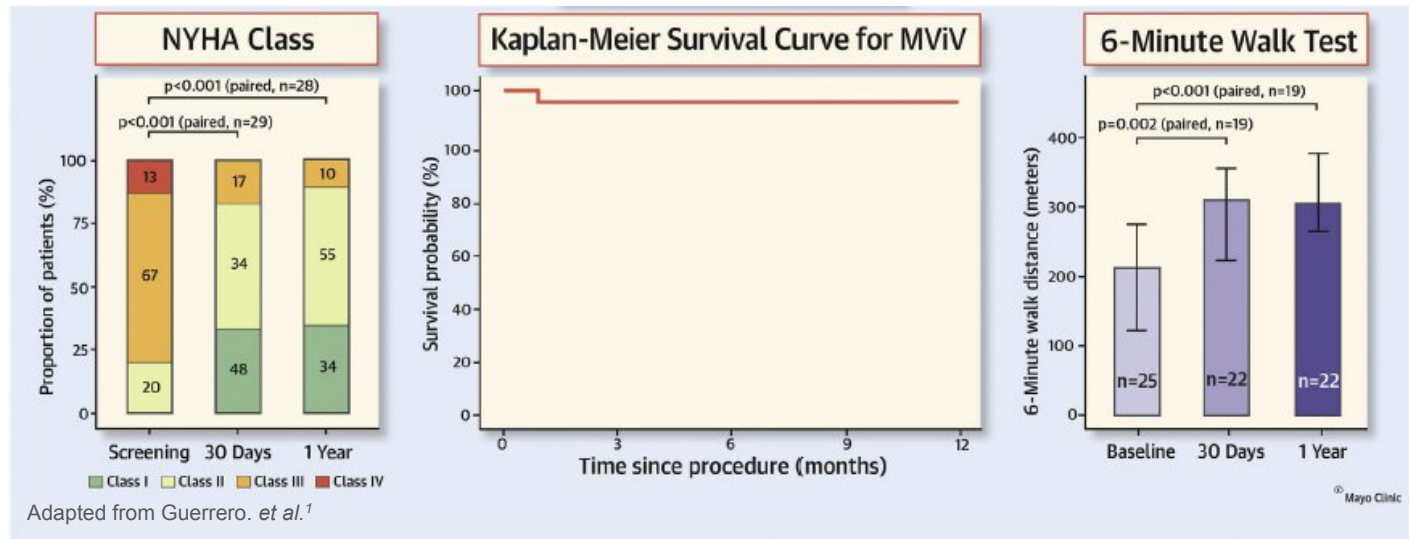


¹Guerrero et al. Circ Cardiovasc Interv . 2020
Mar;13(3):e008425

²Simonata et al. Circulation . 2021 Jan 12;143(2):104-116



Transseptal TMVR for Failed Surgical Bioprostheses



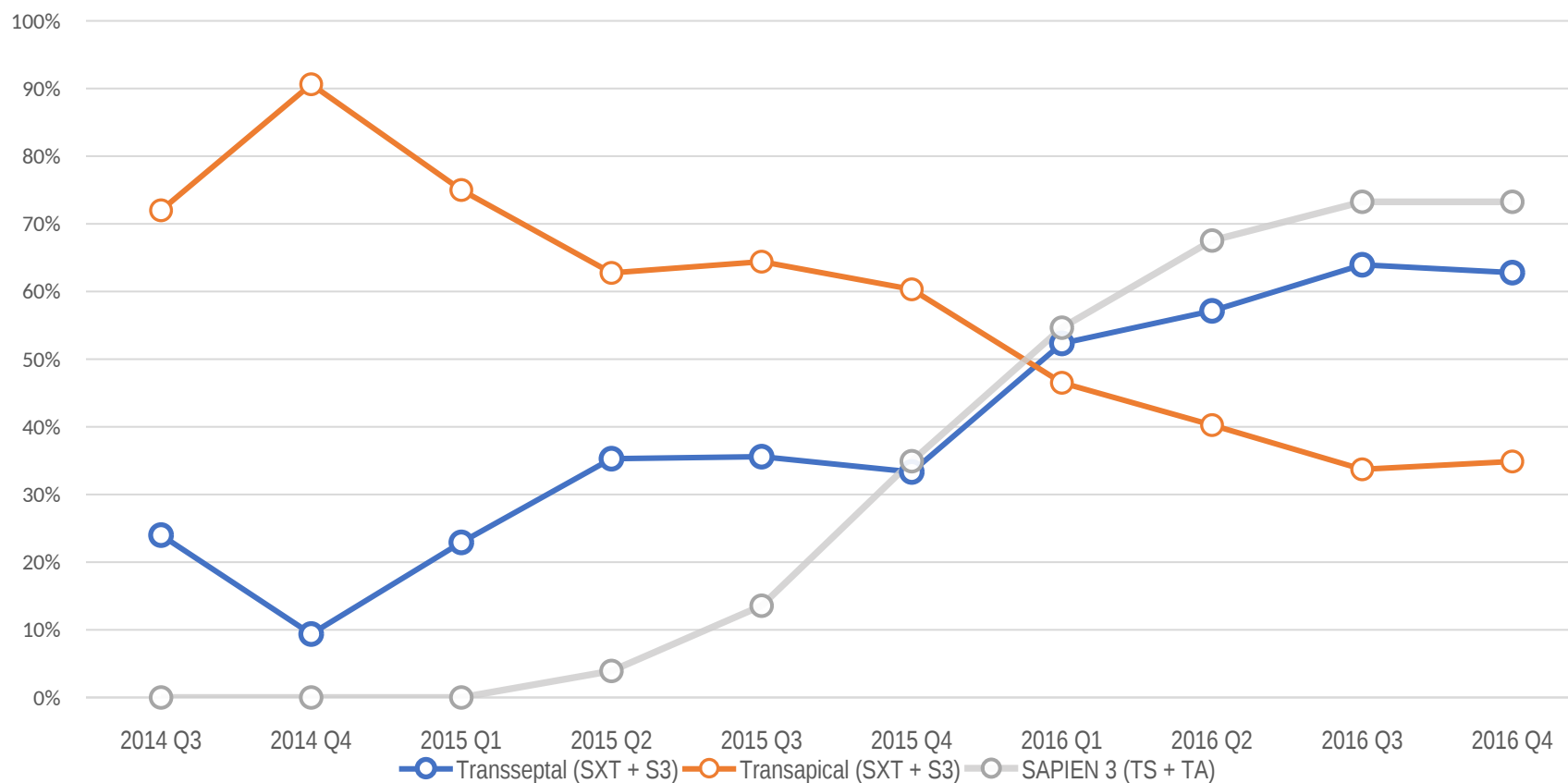
- This is the first prospective, multicenter trial assessing SAPIEN 3 outcomes in the mitral position with both imaging core labs and adjudication committee.
- In selected patients at high surgical risk (STS:9.4%): 100% technical success, low procedural complication rates, and very low mortality rate (3.3%) at 1 year.
- After procedure: alleviation of symptoms, improvement in 6-min walk distance and improvement in quality-of-life scores.

At least in selected patients requiring repeat mitral valve replacement, a transseptal approach can provide a very safe treatment option.

¹Guerrero et al, JACC Cardiovasc Interv. 2021 Apr 26;14(8):859-872



Transseptal TMVR for Failed Surgical Bioprostheses





Procedure Planning Key Points

Know the patient-specific anatomy

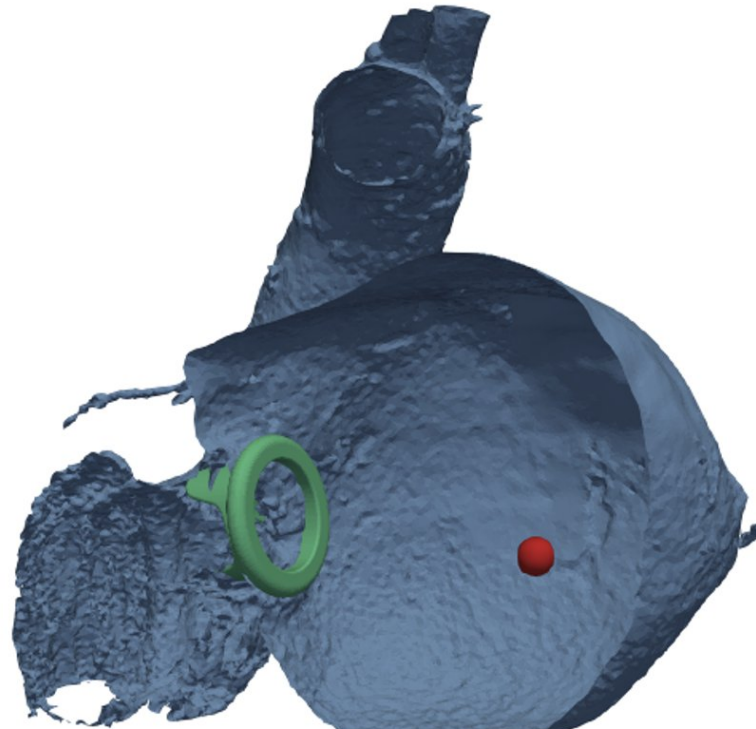
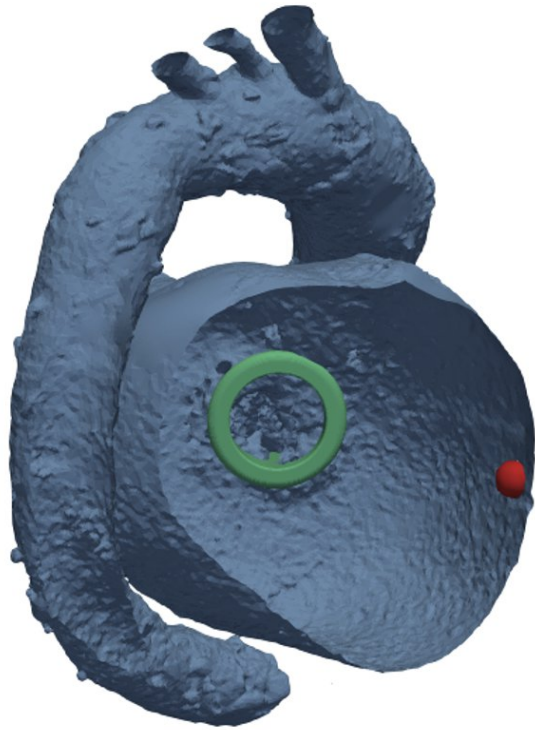
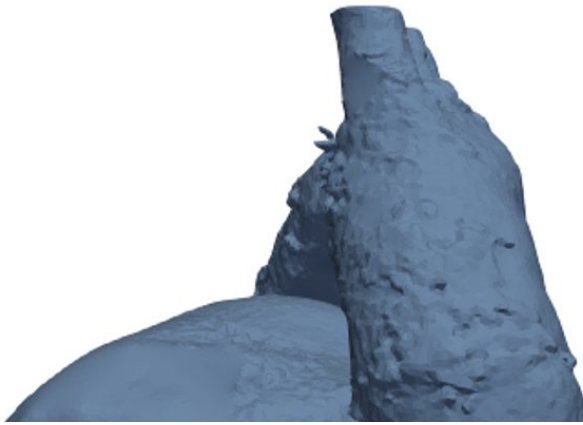
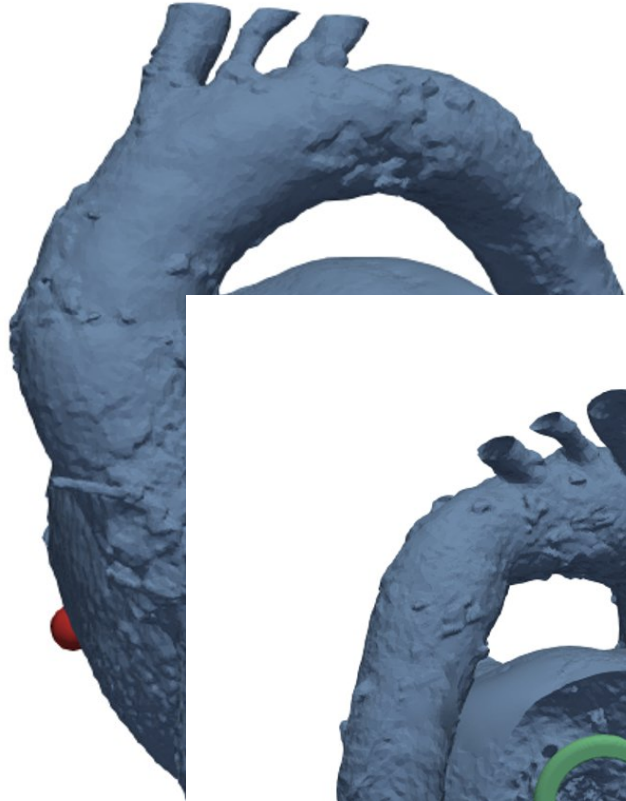
Know the surgical bioprostheses before the procedure

1. Appropriate Sizing

2. Correct Positioning

3. Evaluate Risk of LVOTO

TTE Echo Evaluation



Biocardiolab Ftgm

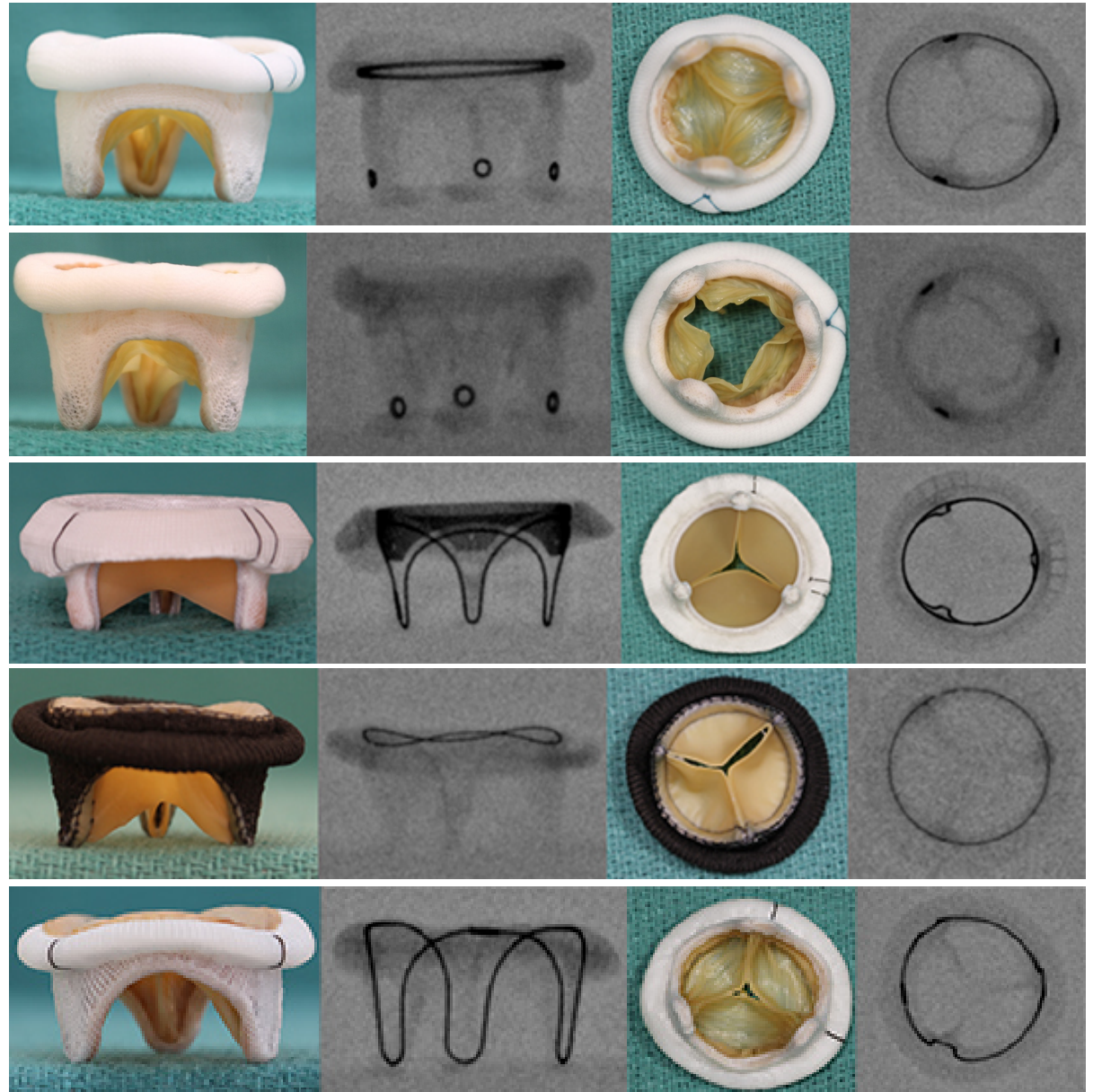
bcl.ftgm.it

Know the Valve

Each valve looks different

The specific model will determine:

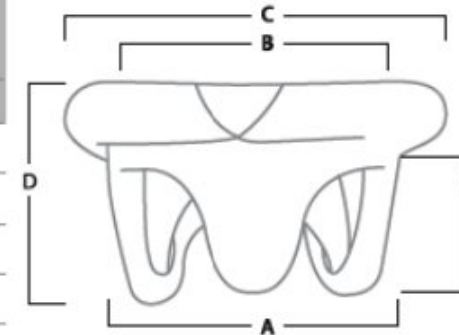
- SAPIEN 3 sizing
- SAPIEN 3 positioning
- Risk of LVOT obstruction



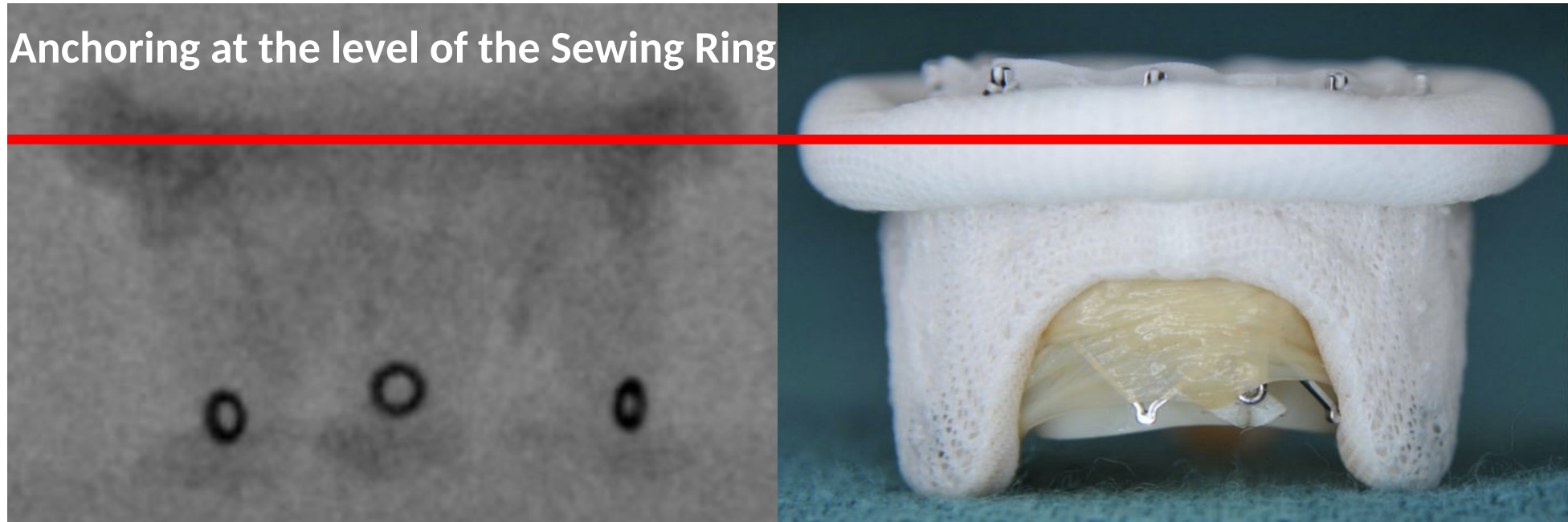
Know the Valve

Medtronic Mosaic 29 *Technical characteristics*

Order Number	A Valve Size (Stent O.D.†)	B Orifice Diameter (Stent I.D.)	C Suture Ring Diameter	D Valve Height	E Ventricular Protrusion
	(±0.5mm)	(±0.5mm)	(±1mm)	(±0.5mm)	(±0.5mm)
310C25	25	22.5	33.0	18.0	13.5
310C27	27	24.0	35.0	19.0	14.0
310C29	29	26.0	38.0	20.5	15.5
310C31	31	28.0	41.0	22.0	17.0
310C33	33	30.0	43.0	23.0	17.5



Anchoring at the level of the Sewing Ring





Ring/band types: confusing for ViR

**Complete, Incomplete,
Partial**



**Rigid, Semi-rigid,
flexible**



D-shape, Circular

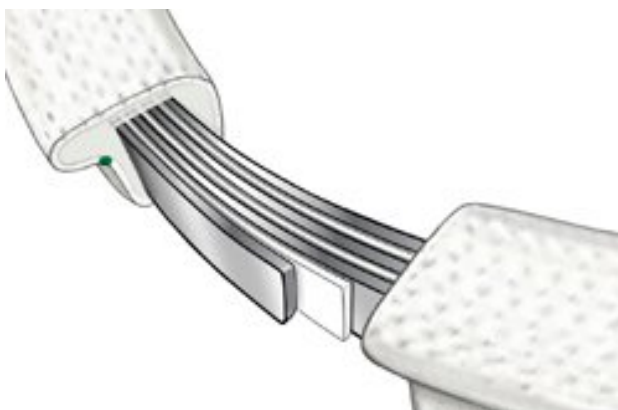


Uniplanar, Saddle





Ring Core defines ability to circularize and provide anchor



Core defines the property

Rigid :

Semi Rigid:

Flexible:

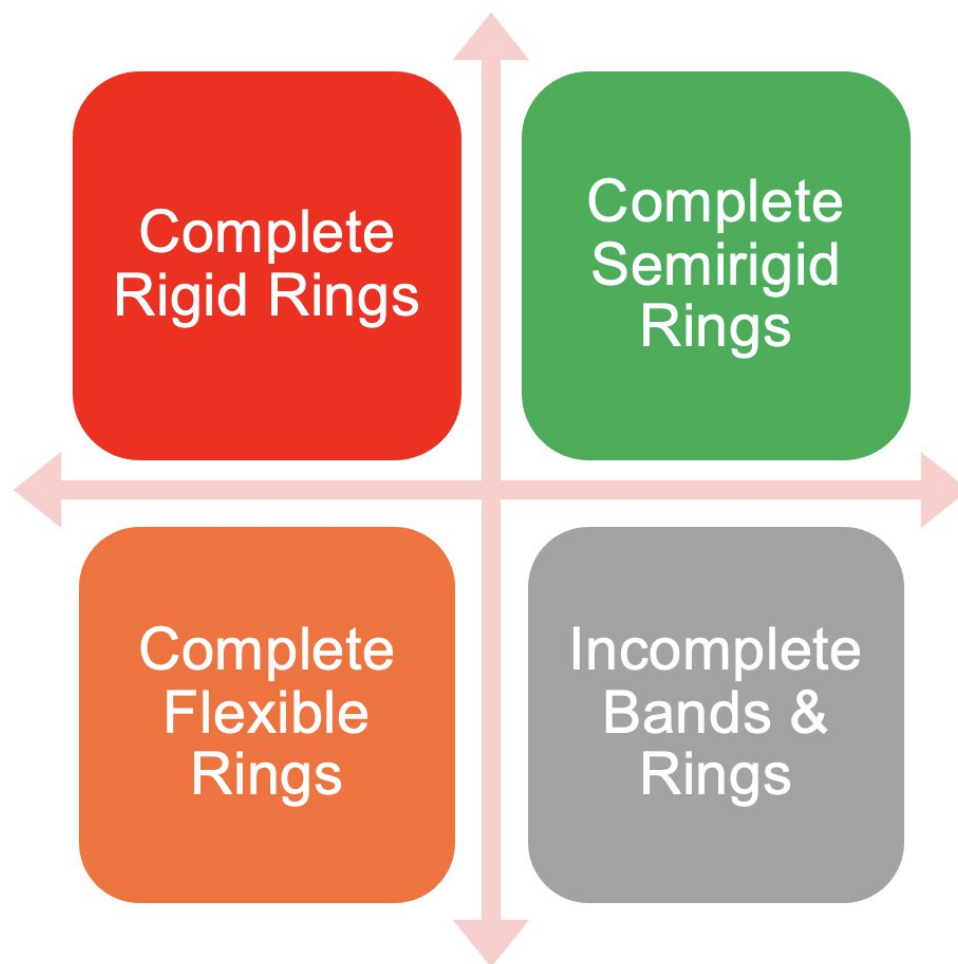
Titanium Band

Multiple Elgiloy plates/Nitinol chains, Metal and suture combination

Suture or only silicon



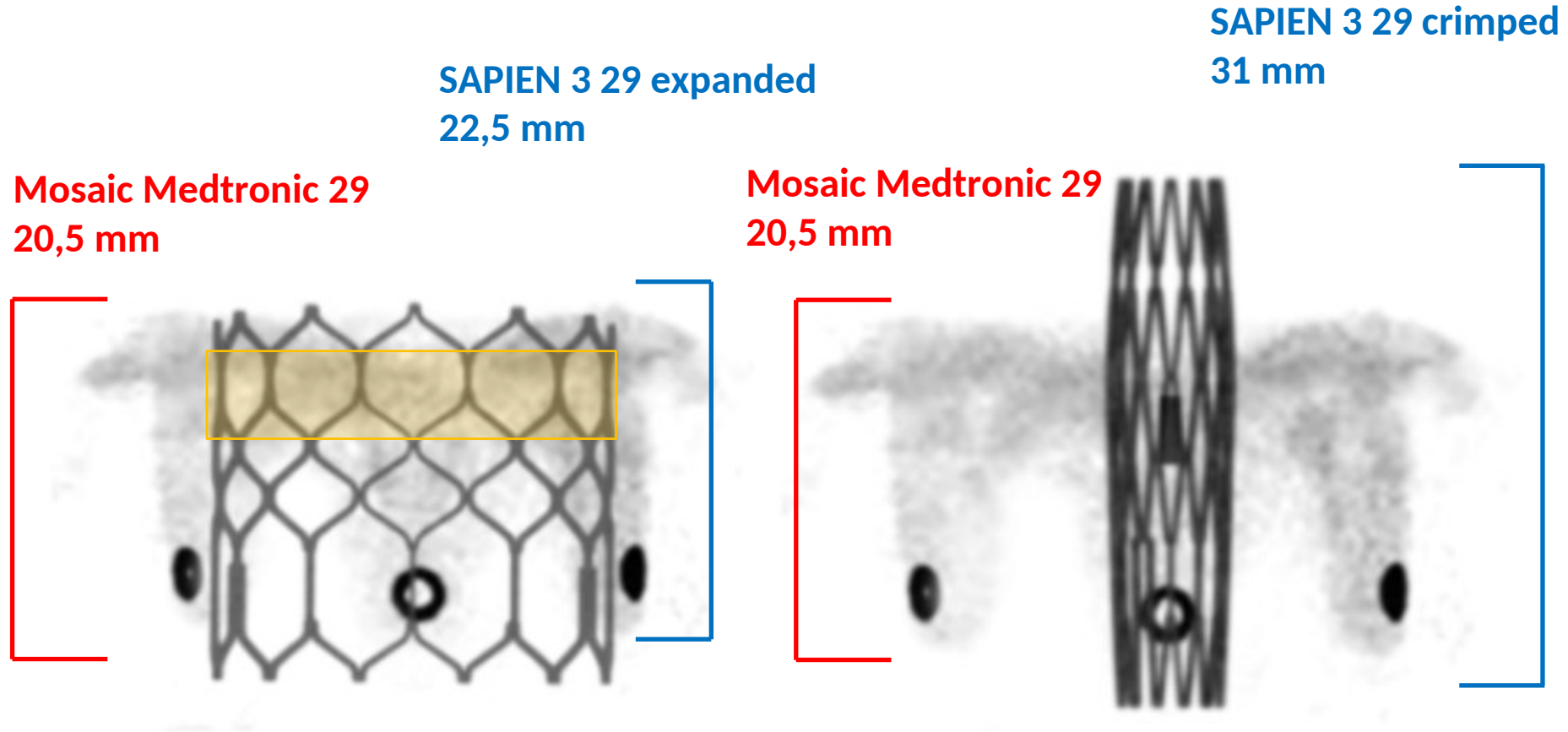
Simplified classification of Rings for VIR



Green: Suitable
Orange: May be suitable
Red: Not suitable
Grey: Debatable !



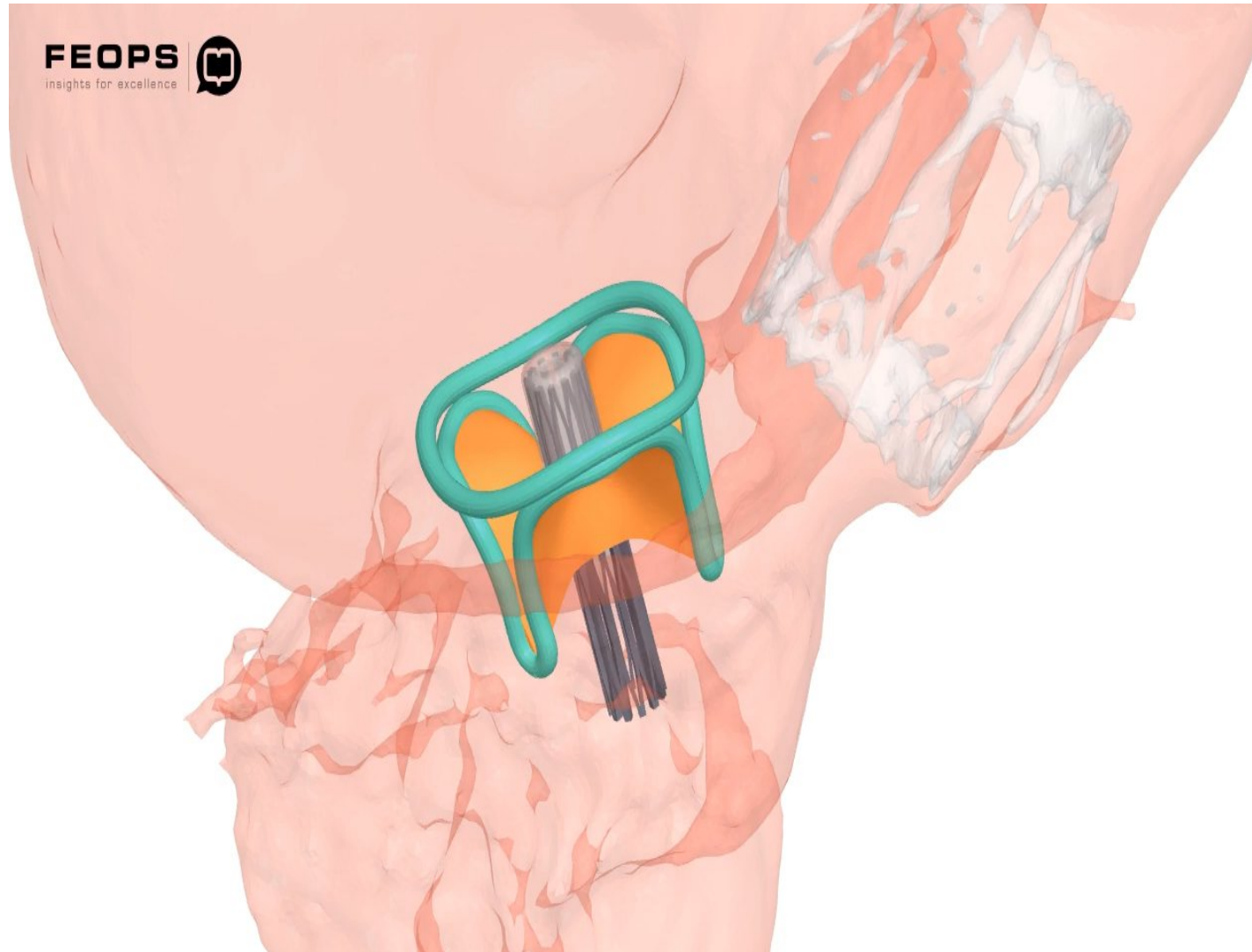
SAPIEN 3 Valve Positioning in Surgical Bioprostheses



SAPIEN 3 29 Foreshortening (crimped – expanded) = 8,5 mm



Feops Simulation Edwards Sapien 3 29

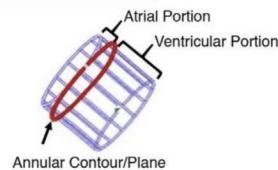


Risk Assessment of LVOT Obstruction-CT

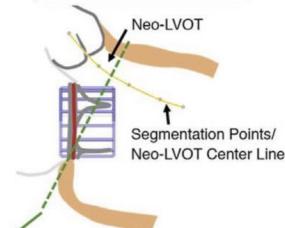


- Distance of the prosthetic post from the IV septum
- Aorto-Mitral angle: >110 degrees is generally favorable
- Left Ventricle Anatomy
- Size and hypertrophy of LV
- Thickness or bulging of Intraventricular septum
- Neo-LVOT area >2 cm²

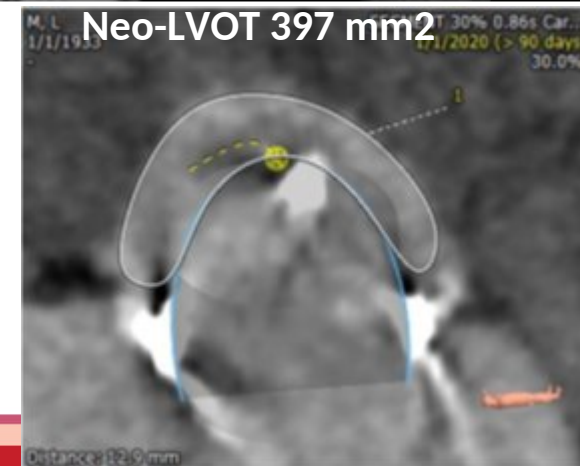
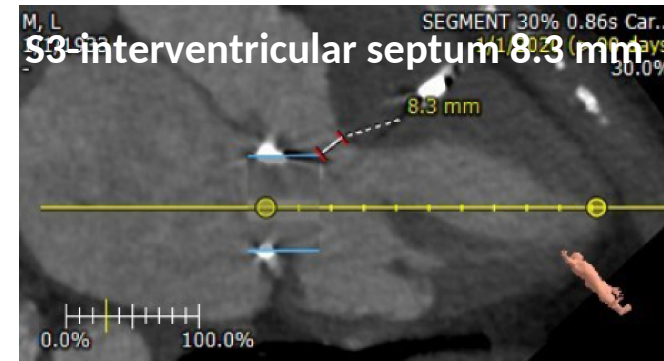
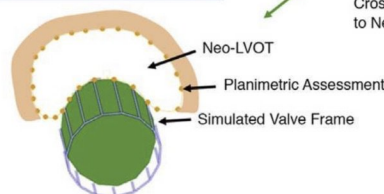
Valve Simulation



Neo-LVOT Centerline



Neo-LVOT Quantification

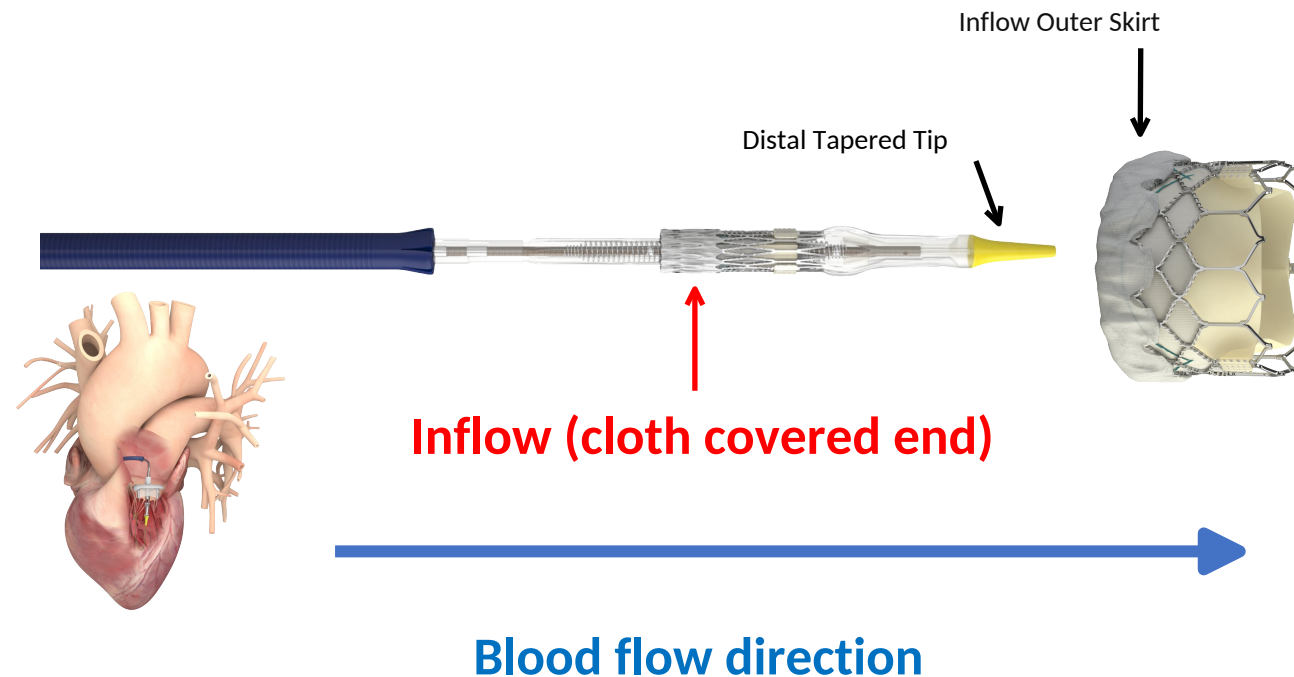


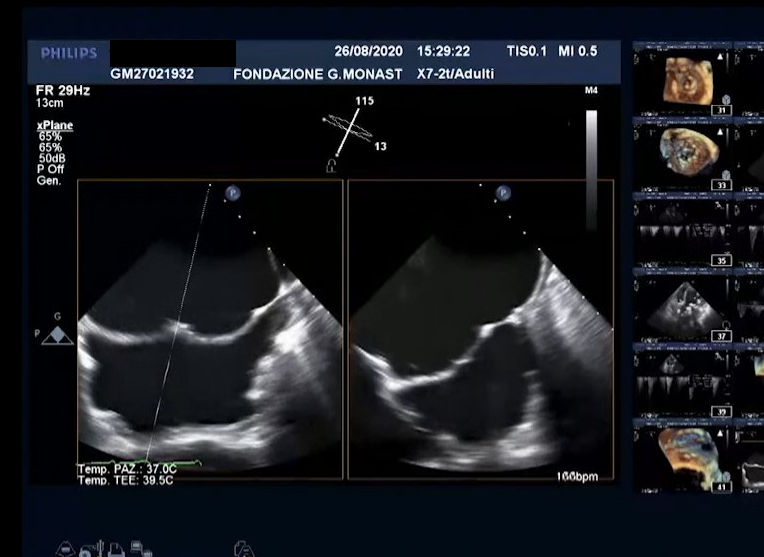
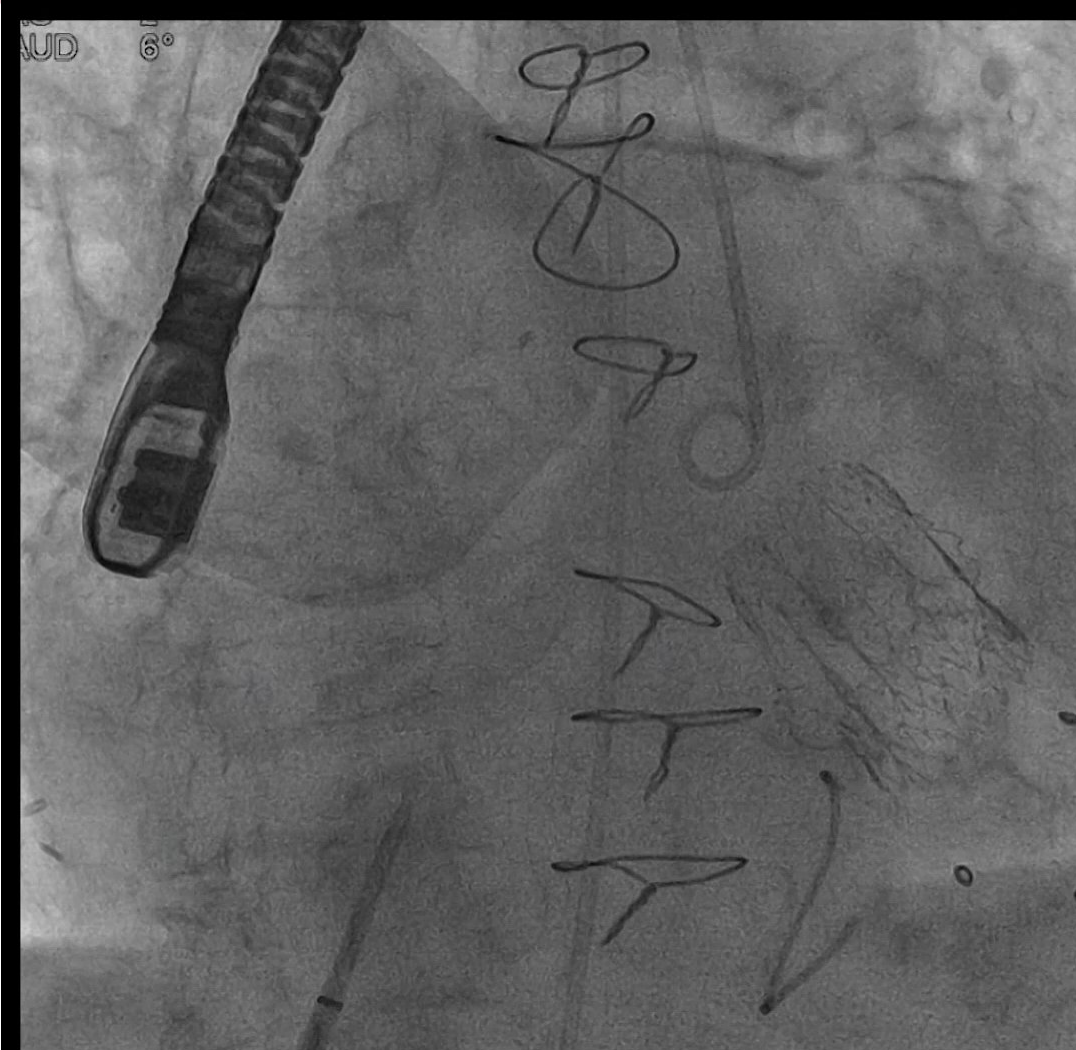


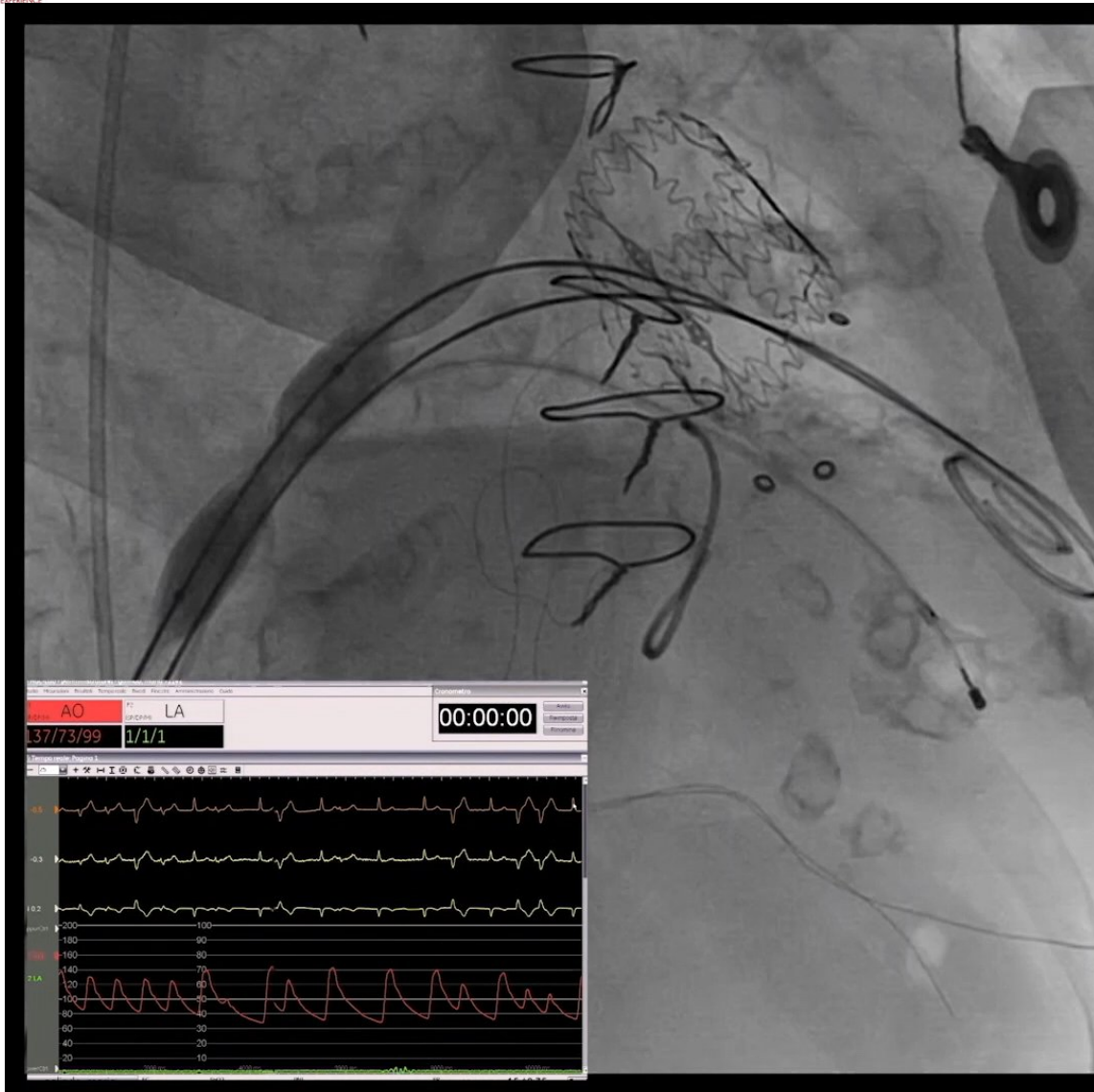
Verify SAPIEN 3 THV Orientation with Commander System for Mitral Position

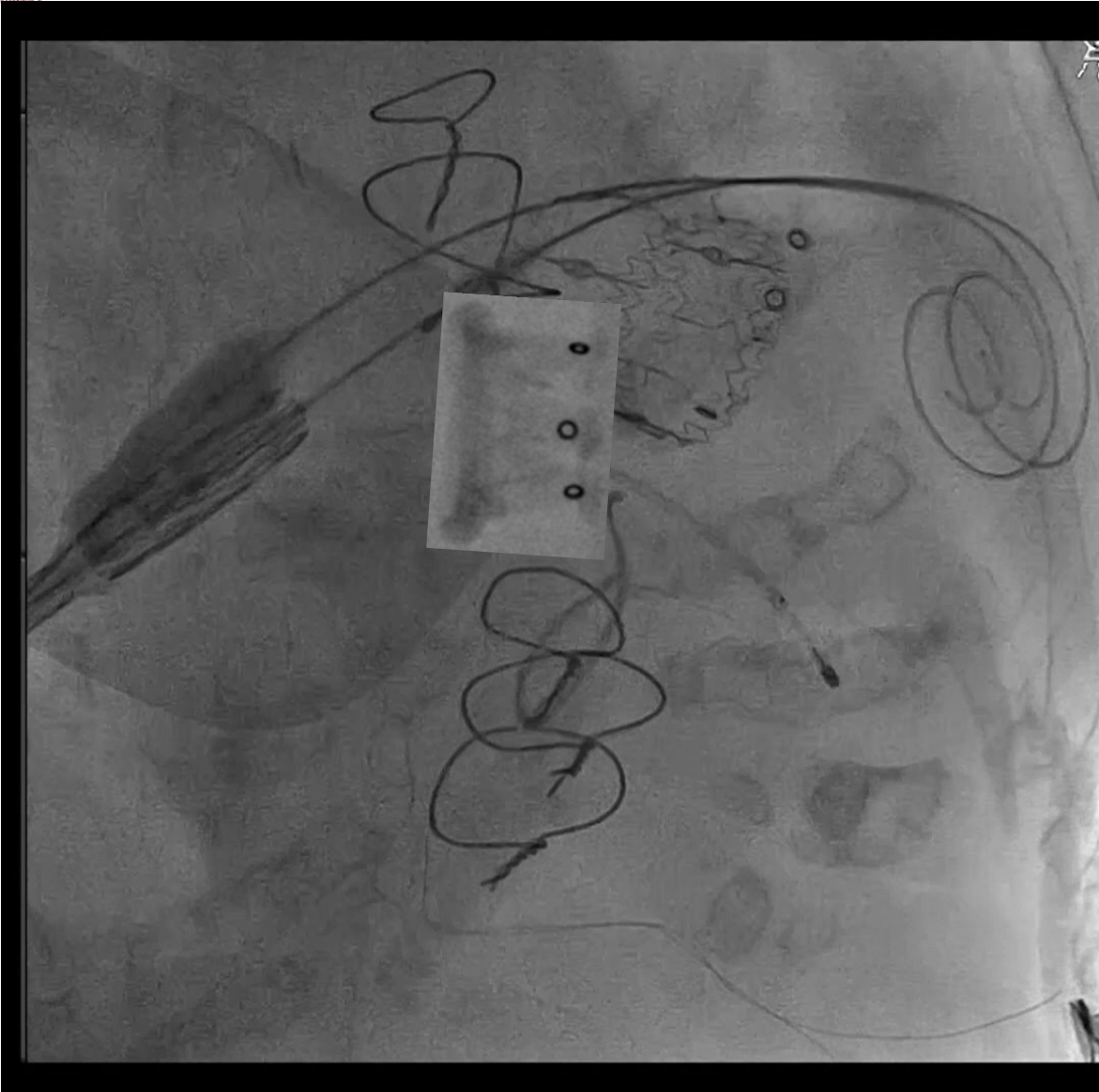
Transseptal Mitral Position

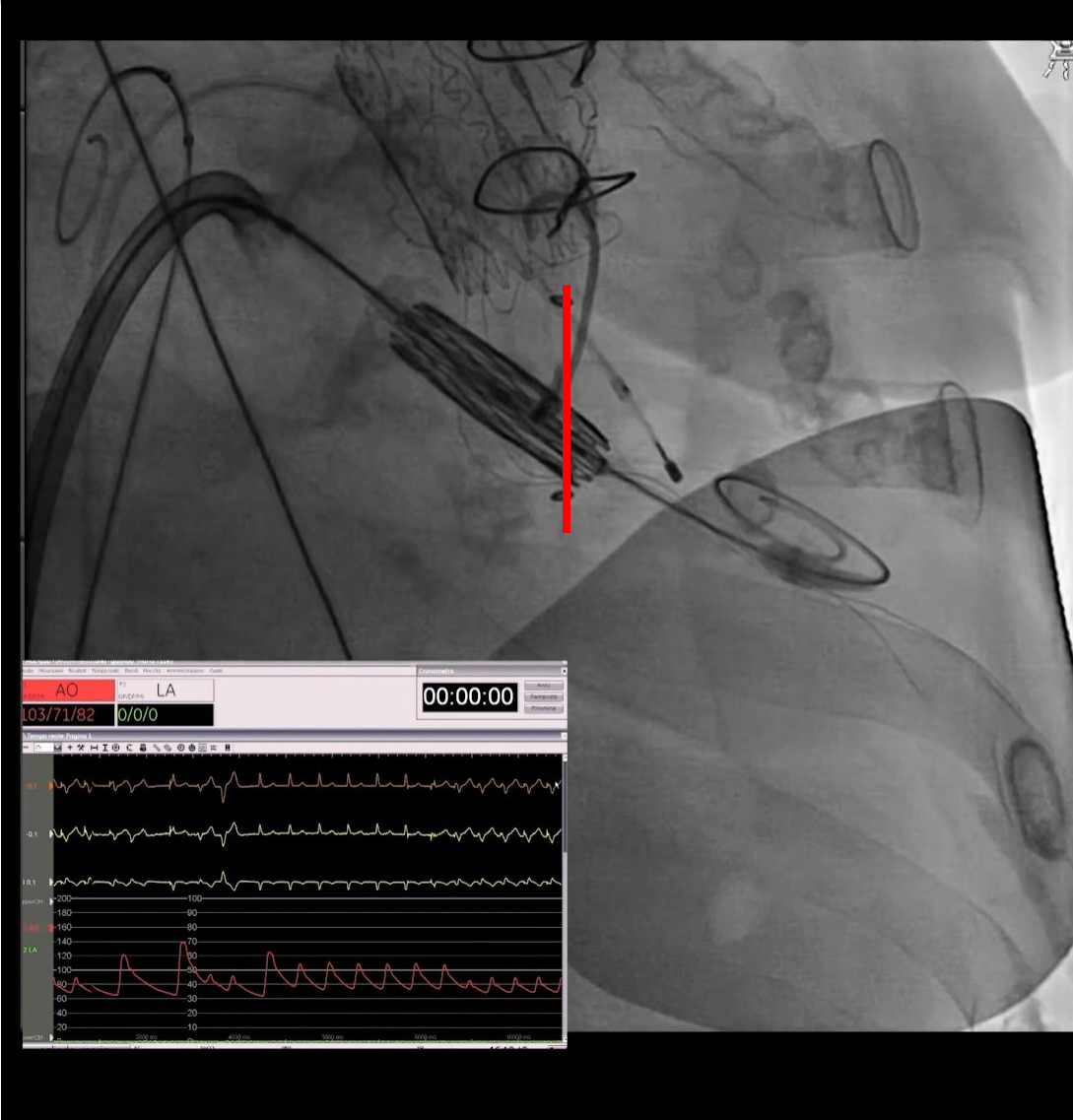
Outer sealing skirt (inflow) of THV oriented proximally towards pusher and outflow end oriented towards the distal tapered tip

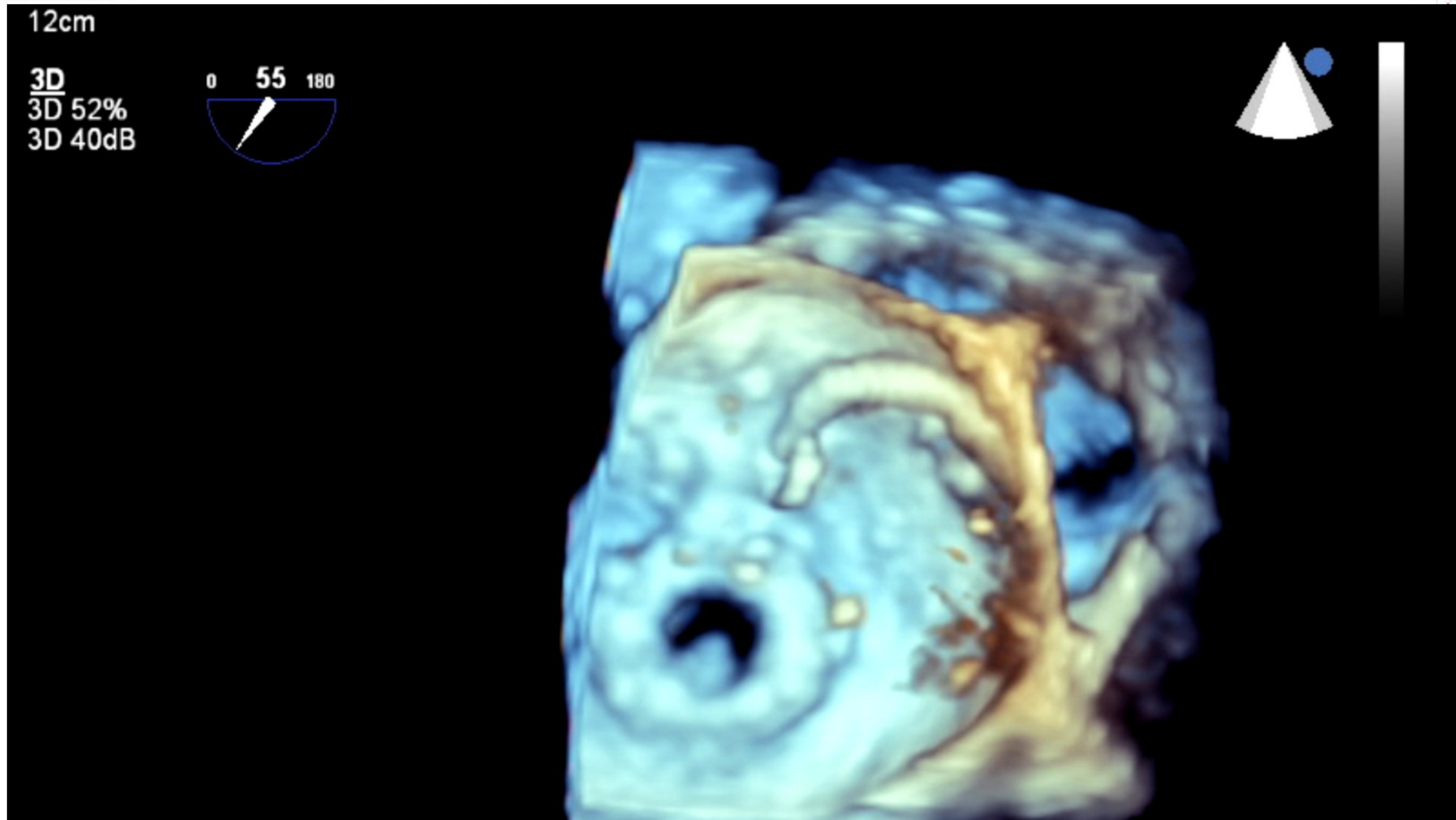








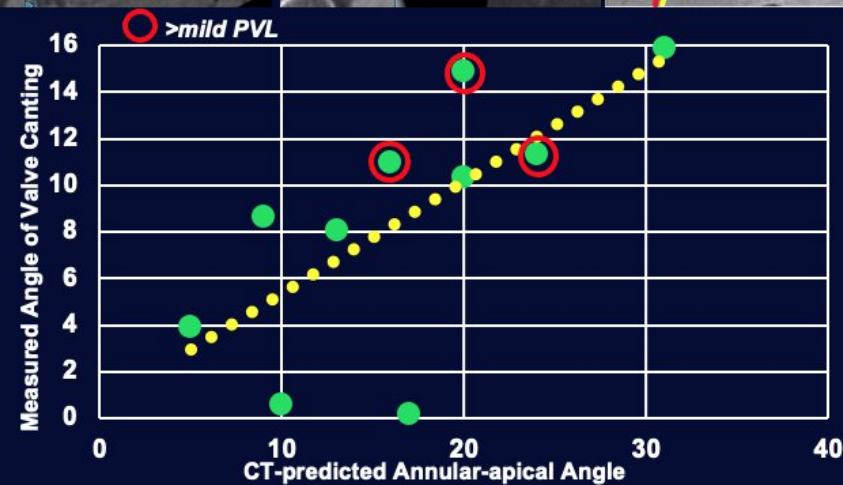
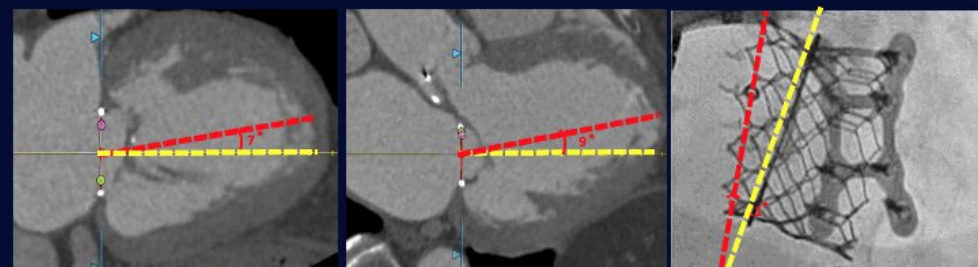
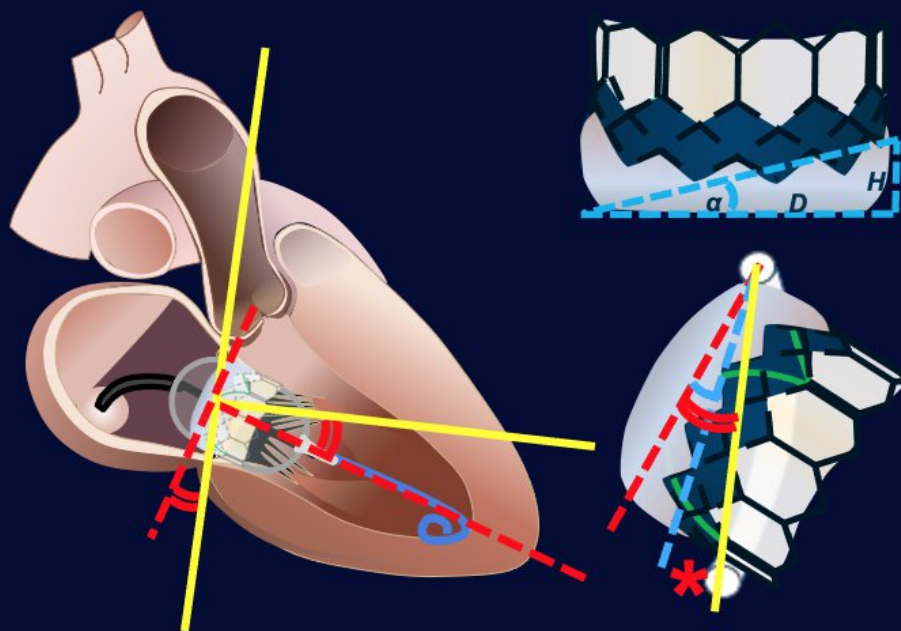






Valve alignment

The Annular to Apical “Emory” Angle





Key Messages

Mitral Valve-in-Valve should be the standard of care for most failing mitral bioprosthesis
What do we need to manage successfully Mitral VinV/VinR TSS?

➤ A good understanding of:

- *the bioprosthesis (technology, size, fluoroscopic aspect etc.) and the previous surgical procedure*
- *the anatomy of the patient*

➤ A good procedure planning (*do not improvise*):

- *Step by step*
- *Identification of contraindications*
- *Evaluate the risk of complications (eg. Risk of LVOT obs.)*
- *Accurate sizing and positioning*

➤ Usage of multimodality imaging (*CT, TEE, Fluoro, advanced analysis*)

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